

*CLAIM AMENDMENTS*

1. (Currently Amended) An optical wavelength converter for converting input phase-modulated light having a first wavelength to output phase-modulated light having a second wavelength, the wavelength converter comprising:

an input-light splitter ~~adapted to split~~ for splitting the input phase-modulated light into first split light and second split light;

a multiplex-interference portion ~~adapted to~~ for multiplex-interfering the first split light and of the second split light to generate intensity-modulated light having the first wavelength; and

a phase modulation portion ~~which~~ for, upon receipt of the intensity-modulated light and of continuous wave light having a wavelength equal to the second wavelength, ~~performs~~ cross-phase modulation of the continuous wave light in accordance with ~~the~~ phase modulation of the input phase-modulated light.

2. (Currently Amended) The optical wavelength converter according to claim 1, wherein the multiplex-interference portion includes:

an injection synchronization laser diode which generates continuous wave light having a wavelength equal to the first wavelength, upon ~~input~~ receipt of the first split light; and

a multiplex optical coupler which multiplexes the continuous wave light having the first wavelength generated by the injection synchronization laser diode and the second split light ~~outputted~~ output from the input-light splitter.

3. (Currently Amended) The optical wavelength converter according to claim 1, wherein the multiplex-interference portion includes a delay portion for delaying one of the first split light and the second split light by one-bit delay time ~~from~~ relative to the other of the first split light and the second split light in ~~performing the interference~~ multiplex interfering.

4. (Currently Amended) The optical wavelength converter according to claim 2, wherein the phase modulation portion comprises a semiconductor optical amplifier ~~having~~ a producing the cross-phase modulation effect.

5. (Currently Amended) The optical wavelength converter according to claim 3, wherein the phase modulation portion comprises a semiconductor optical amplifier ~~having~~ a producing the cross-phase modulation effect.

6. (Currently Amended) The optical wavelength converter according to claim 2, wherein the phase modulation portion comprises an electro-absorption optical modulator ~~of an electro-absorption type having a~~ producing the cross-phase modulation effect.

7. (Currently Amended) The optical wavelength converter according to claim 3, wherein the phase modulation portion comprises an electro-absorption optical modulator ~~of an electro-absorption type having a~~ producing the cross-phase modulation effect.

8. (Currently Amended) The optical wavelength converter according to claim 2, wherein the phase modulation portion comprises a plurality of phase modulators connected in series, said plurality of phase modulators including:

a first phase modulator that performs the cross-phase modulation between the intensity-modulated light having the first wavelength generated by the multiplex-interference portion and the continuous wave light having the second wavelength, and

a second phase modulator that performs cross-phase modulation between subsequent-stage intensity-modulated light and subsequent-stage phase-modulated light having the second wavelength and generated by the first phase modulator.

9. (Currently Amended) The optical wavelength converter according to claim 3, wherein the phase modulation portion comprises a plurality of phase modulators connected in series, said plurality of phase modulators including:

a first phase modulator that performs the cross-phase modulation between the intensity-modulated light having the first wavelength generated by the multiplex-interference portion and the continuous wave light having the second wavelength, and

a second phase modulator that performs cross-phase modulation between subsequent-stage intensity-modulated light and subsequent-stage phase-modulated light having the second wavelength and generated by the first phase modulator.

10. (Currently Amended) The optical wavelength converter according to claim 1, wherein the multiplex-interference portion includes a delay portion for delaying one of the first split light and the second split light by a delay time shorter than a one-bit time

from the other ~~one~~ of the first split light and the second split light in ~~performing~~ the multiplex-~~interference~~ interfering of the first split light and the second split light, to generate an optical pulse.

11. (Currently Amended) The optical wavelength converter according to claim 10, further comprising an optical bistable device which generates ~~an~~ intensity-modulated light having the first wavelength with an optical-power intensity varied in response to ~~input of~~ the optical pulse generated by the multiplex-interference portion, wherein the intensity-modulated light generated by the optical bistable device and the continuous wave light having the second wavelength are ~~inputted~~ input to the phase modulation portion to output the phase-modulated light having the second wavelength.